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Recognizing anxiety and post-traumatic stress disorder in cardiac patients

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Abstract

Research has established that anxiety and post-traumatic stress disorder (PTSD) are risk factors for the development of heart disease in healthy populations. In addition, anxiety and PTSD are associated with further morbidity in people with existing heart disease. This article considers whether anxiety and PTSD influence onset and recovery from heart disease. Clinical implications for cardiac nursing are considered, including screening, treatment, and referral on to specialist services.

Key words Anxiety Cardiovascular disease Myocardial infarct Post-traumatic stress disorder Cardiac rehabilitation

Anxiety is a response to threat—whether real or imagined. Although anxiety is generally regarded as a psychological condition it has a strong physiological component through activation of the sympathetic branch of the autonomic nervous system. Anxiety can therefore be accompanied by symptoms such as a racing heart, palpitations and breathlessness. Anxiety is very common in cardiac patients—approximately 50% of patients have symptoms of anxiety after acute cardiac events and approximately 25% have anxiety disorders (Crowe et al, 1996; Januzzi et al, 2000).

Anxiety can play a role in heart disease in a number of ways. It may affect the development of heart disease Further morbidity or prognosis Health-care use and attendance, or Lifestyle factors and rehabilitation. The link between anxiety and the development of heart disease is now well established. A systematic review of prospective studies of healthy samples concluded that anxious people are between 2.4 and 7.8 times more likely to develop heart disease (Suls and Bunde, 2005). Evidence for the effect of anxiety on prognosis in patients with existing heart disease is less consistent; the same review concluded that the majority of research finds no relationship between anxiety and mortality in cardiac patients (Suls and Bunde, 2005).

However, anxiety might affect further morbidity. Research suggests anxious patients are one to five times more likely to experience further morbidity such as nonfatal myocardial infarction (MI), new onset or recurrent ischaemia, ventricular tachycardia, congestive heart failure and unstable angina (Frasure-Smith et al, 1995; Moser and Dracup, 1996; Denollet and Brutsaert, 2000). The effect of anxiety on cardiac morbidity appears to be independent of depression (Huffman et al, 2008).

Anxiety may also affect attendance and use of healthcare services. As already mentioned, anxiety is associated with a focus on threat-related stimuli. In people with heart disease this means anxiety may lead to an increased focus on cardiac and other physical symptoms. For example, Karsdorp et al (2009) found that when people were given false information about irregular heartbeat, anxious patients were more likely to interpret this as a symptom of cardiac problems than non-anxious patients or healthy controls. Anxious patients are also more likely to experience non-cardiac chest pain (White et al, 2010). Other evidence supports the influence of anxiety and depression on health service use, but the direction of this effect is not clear or necessarily consistent. For example, some studies have shown that anxiety and depression in cardiac patients predicts poor attendance at rehabilitation and increased hospital readmissions (Tully et al, 2008; Deskur-Śmielecka et al, 2009). However, this latter finding may be partly due to increased morbidity, rather than psychological distress per se. Similarly, anxiety and depression may have different effects on different types of service use. For example, one study found that length of stay in hospital after coronary artery bypass graft surgery was longer in patients with depression but shorter in those with PTSD symptoms (Oxlad et al, 2006).

It is not yet clear whether anxiety affects rehabilitation and lifestyle changes. Most research in this area has looked more generally at anxiety and depression combined. There is some evidence that anxiety and depression are associated with poor adherence to dietary advice and other aspects of rehabilitation (Kuhl et al, 2009; Luyster et al, 2009) but the evidence is inconsistent. A recent study of anxiety in 278 MI patients found that anxiety was associated with less change in socializing, smoking cessation or stress management four months after MI, even after controlling for demographic, cardiovascular and other psychological variables (Kuhl et al, 2009).

Post-traumatic stress disorder and heart disease

To date, most research into anxiety and heart disease has focused on symptoms of anxiety, as measured by self-report questionnaires, rather than classifying the presence of anxiety disorders. While this approach has merit, consideration of the full range of anxiety disorders may bring to light presentations and clusters of symptoms that otherwise go undetected in heart disease. Anxiety disorders include generalized anxiety disorder, panic, phobias, obsessive-compulsive disorder and posttraumatic stress disorder (PTSD). Of these, there has been increasing interest in the occurrence of PTSD following cardiac events (Owen et al, 2001; Spindler and Pedersen, 2005; Ginzberg, 2006). PTSD is an anxiety disorder that

occurs when people experience a life-threatening event during which they feel intense fear or helplessness. Diagnostic criteria for PTSD are shown in *Table 1*.

Like other anxiety disorders, PTSD is a risk factor for the development of heart disease and other illnesses. Epidemiological studies of war veterans show those with PTSD report more circulatory, digestive, nervous, respiratory and musculoskeletal diseases (Boscarino, 1997), and are at greater risk of cardiovascular disease, cancer and all-cause mortality (Boscarino, 2006). PTSD symptoms appear to have a dose-response effect on cardiovascular disease. In other words, it is not necessary for a person to reach diagnostic criteria for PTSD—even low and moderate symptoms increase risk of heart disease (see Kubzansky and Koenen (2009) for an overview). For example, a prospective study found that women with five or more symptoms of PTSD were three times more likely to develop heart disease, even after controlling for risk factors such as diabetes, smoking, hypertension, anxiety and depression (Kubzansky et al, 2009).

In cardiac patients, PTSD is most likely to occur after severe events with sudden onset, such as MI or cardiac arrest. PTSD may also be related to the traumatizing nature of some medical treatments, such as resuscitation. For example, patients in the intensive care unit report a variety of psychological consequences such as confusion, fragmented recall of events, nightmares and hallucinations, which can increase vulnerability to PTSD (Jones et al, 2001). Reviews of PTSD following MI report prevalence rates of up to 22%, with an average prevalence of around 15% (Spindler and Pedersen, 2005; Gander and von Känel, 2006). Up to another 18% of people may experience subclinical levels of PTSD symptoms (Ayers et al, 2009).

Research into PTSD after a range of health events shows there is very little association between severity of injury or disease and PTSD (Tedstone and Tarrar, 2003). This also appears to be the case after MI, where PTSD is best predicted by factors such as perceived severity of MI, feelings of helplessness, fear of dying, and young age (Rocha et al, 2008; Guler et al, 2009; Wiedemar et al, 2009).

Many people who have PTSD symptoms immediately after an MI will recover without treatment. Studies of PTSD in other populations have shown that up to half of people with symptoms immediately after the event recover without intervention in the first three months. A study of rape victims found that although 94% met symptom criteria for PTSD 2 weeks after rape this decreased to 47% 3 months after the assault (Rothbaum and Foa, 1993). The same has been found in longitudinal studies of PTSD in medical populations such as women after pregnancy loss or stillbirth (Englehard et al, 2001; Turton et al, 2001). The way patients cope after MI is therefore critical in resolution of PTSD symptoms. Ayers et al (2009) found the strongest predictors of PTSD symptoms after MI were if the patient had a history of psychological problems, believed the MI had negative consequences (e.g. problems in relationships or dealing with medication and self-care) and used dysfunctional coping techniques (e.g. trying to numb emotions, distract themselves from upsetting thoughts). These factors were more strongly associated with PTSD than perceived severity of the MI.

If PTSD does not resolve, it potentially has a strong impact on the psychological and physical wellbeing of MI patients. PTSD is associated with impaired social functioning, poor physical health (Ginzburg et al, 2003), increased psychological distress, depression, anxiety, somatic complaints (Ginzburg, 2006; Chung et al, 2008), and decreased quality of life (Cohen et al, 2009). Approximately half of people who develop PTSD after MI may also develop depression (Ginzburg, 2006). There is some evidence that the combination of both anxiety and depression leads to an even poorer prognosis for patients with heart disease (Doering et al, 2009).

Less research has looked at the effect of PTSD on prognosis. The few studies that are available suggest PTSD is associated with increased reports of cardiovascular symptoms, physical limitations, readmission and mortality (Shemesh et al, 2004; Ladwig et al, 2008; Cohen et al, 2009) but not necessarily with differences in measurable physiological parameters such as left ventricular ejection fraction (LVEF) (Ladwig et al, 2008). For example, a study of more than 1000 people with heart disease found physical limitations and self-

reported cardiovascular health were more strongly predicted by PTSD than by physical measures of cardiovascular health such as LVEF or inducible ischaemia (Cohen et al, 2009). A long-term follow up of patients with implanted cardioverter-defibrillators showed that patients with PTSD were 3.5 times more likely to die over 5 years, even after controlling for age, sex, diabetes, medication, LVEF, depression and anxiety (Ladwig et al, 2008).

Clinical implications

The impact of anxiety and PTSD on patients with heart disease has important implications for screening, treatment and onward referral.

Screening

Identifying which patients need psychological intervention is a key task for health care professionals involved in care of cardiac patients (Janeway, 2009). Guidelines commissioned by the National Institute for Health and Clinical Excellence (NICE) (Cooper et al, 2007), the British Heart Foundation (National Audit of Cardiac Rehabilitation team, 2009), and the Department of Health's National Service Framework (NSF) (DH, 2000) emphasize the need to identify potential psychological consequences of heart disease, such as anxiety and depression. The NSF outlines that patients should be offered an assessment of their physical, psychological and social needs for cardiac rehabilitation, before discharge from hospital.

Various self-report instruments are available to screen for anxiety (Janeway, 2009) that are a practical and cost-effective way for cardiac nurses to assess patients' levels of anxiety. For example, a screening tool for psychological distress (STOP-D) has been designed specifically for use in cardiology settings (Young et al, 2007). This is a brief 5-item measure where patients rate their levels of depression, anxiety, stress, anger and support. Cardiac nurses can administer these self-rated screening tools and when patients scores indicate high levels of anxiety or other distress this can be followed up with a discussion with the patient on the exact nature of his/her symptoms.

It is unlikely to be helpful to screen all patients for PTSD or to use PTSD-specific measures. Notable PTSD symptoms include distressing dreams, intrusive recollections of the cardiac event and/or its treatment, feeling as if the event is reoccurring and distress when reminded of the event. If these are noted it is then possible for cardiac nurses to provide immediate support themselves within the boundaries of their competency and/or make appropriate referrals to other health professionals (e.g. psychologist, psychiatrist, counsellor) for additional assessment and support (Davies et al, 2004).

Treatment

In mild-to-moderate cases of anxiety, including PTSD, information giving and reassurance about the symptoms experienced can be helpful, especially in the early stages after a cardiac event. If patients are able to understand and normalize their symptoms they are less likely to ruminate about the meaning of their symptoms and adopt dysfunctional coping strategies, factors associated with the development and maintenance of anxiety symptoms.

It has long been recognized that social support can play a role in improving health outcomes for patients (Wills and Fegan, 2001). Anxiety after MI appears to be particularly prevalent in people who live alone (Kuhl et al, 2009) so cardiac nurses should be alert to the needs of this population and encourage patients to expand their social network.

In addition, partners of patients who have suffered an MI often experience feelings of distress (Joeques et al, 2005). There are no data on how PTSD in cardiac patients affects partners, although it is reasonable to assume this may be an additional source of tension for partners/carers. Although supporting partners and attending to relationships may be beyond the scope of practice for cardiac nurses (Daugherty et al, 2002), recognition of this problem is important and may influence a decision to refer a patient on to an appropriate service.

Cardiac rehabilitation (CR) is recommended for patients following MI. The efficacy of CR is widely recognized as resulting in decreased morbidity and mortality (Eshah and Bond, 2009). Information about coping with anxiety can be, and often is, incorporated into CR sessions. Given the potential for CR to reduce morbidity and mortality it is concerning that both referral

to and uptake of cardiac rehabilitation is sub-optimal in the UK. Around one third of all people (34%) who suffered an MI in England, Northern Ireland and Wales in 2007–8 took part in a cardiac rehabilitation programme (National Audit of Cardiac Rehabilitation, 2009). This means approximately 55 000 post-MI patients did not participate in cardiac rehabilitation during that year. It is difficult to identify who these patients are, but it may be that anxiety symptoms, including PTSD, hinder participation in CR. Some details are known: fewer women and patients from ethnic minority groups attend. Worryingly, an earlier report by the Healthcare Commission identified that the majority of patients who did not attend said they were unaware of the service (Kmietowicz, 2005).

Onward referral

The recommended treatment for many anxiety disorders—including PTSD—is psychotherapy. Cognitive behaviour therapy (CBT) or eye movement desensitization reprocessing (EMDR) are recommended by the NICE guidelines (National Collaborating Centre for Mental Health, 2005) as effective forms of intervention

For moderate symptoms of anxiety or PTSD it may be feasible to treat people in primary care and GPs can refer to an appropriate local service. Severe symptoms of anxiety or PTSD require referral to adult mental health services or specialist PTSD services.

However, it should be emphasized that patients who are distressed by a cardiac event may find it difficult to engage with mental health services due to concerns about stigma. In addition mental health services may not be best placed to support cardiac patients with their concerns. It is often helpful for cardiac services to make links with psychologists and psychiatrists who are experienced with both mental health and physical health difficulties.

Recommendations for cardiac nursing taking into account the points above are summarized in *Table 2*.

Conclusions

In conclusion, research clearly shows that anxiety symptoms, including PTSD, are a risk factor for the development of heart disease and are associated with further morbidity in cardiac patients. Screening and treatment for anxiety is therefore critical in cardiac settings. The information available so far, as outlined in this article, suggests that appropriate management of anxiety, including PTSD, should lead to increased quality of life and reduced morbidity or mortality for these patients. However, this has yet to be evaluated or confirmed by research.

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Table 1. DSM-IV criteria for PTSD (American Psychiatric Association, 1994)

Criteria	
Event	Must involve threatened death, serious injury or threat to physical integrity of self or other Individual must respond with intense fear, helplessness or horror
Symptoms	<p>Re-experiencing 1 or more:</p> <p>Recurrent and intrusive distressing recollections of the event Recurrent distressing dreams of the event Acting or feeling as if the event were recurring (e.g. flashbacks, hallucinations) Intense psychological distress when exposed to reminders of the event Physiological reactivity when exposed to reminders of the event</p>
	<p>Avoidance & Numbing 3 or more:</p> <p>Efforts to avoid thoughts, feelings, or conversations associated with the event Efforts to avoid activities, places, or people that will remind them of the event Inability to recall some aspects of the event Diminished interest or participation in significant activities Feeling of detachment or estrangement from others Restricted range of affect Sense of foreshortened future</p>
	<p>Arousal 2 or more:</p> <p>Difficulty falling or staying asleep Irritability or outbursts of anger Difficulty concentrating Hypervigilance Exaggerated startle response</p>
Duration	1 month or more
Disability	Symptoms cause clinically significant distress or impaired functioning

Table 2. Recommendations for cardiac nursing

Screening: Anxiety and other psychological distress can be screened for using self-report questionnaires or standard questions such as the STOP-D (Young et al., 2007).

Key symptoms that indicate PTSD may be present are intrusive and distressing recollections, dreams, flashbacks, or hallucinations of the MI or other cardiac event.

Referral: Dependant on what clinical services are available for referral, appropriate protocols for referral to a counsellor, psychologist, or psychiatrist should be developed.

Social support and partners: Including partners or close relatives/carers in cardiac rehabilitation will enable you to explore areas of concern (for example, see Daugherty et al, 2002).

Training: Courses are available on how to deal with psychosocial aspects of cardiac disease through the British Association of Cardiac Rehabilitation.

Key Points

- Approximately 50% of cardiac patients may have symptoms of anxiety and 25% have anxiety disorders
- Anxiety can affect the development of heart disease, further morbidity, healthcare use and possibly rehabilitation
- Post-traumatic stress disorder (PTSD) is an anxiety disorder and occurs in approximately 15% of people after sudden cardiac events such as myocardial infarction or cardiac arrest. A further 18% may
- have subclinical symptoms of PTSD
- PTSD symptoms are associated in a dose-response manner to cardiac morbidity and mortality, even after taking into account usual cardiac risk factors
- Cardiac care therefore should include screening and management of anxiety and PTSD.